IN THE CLAIMS

1. (Currently amended) A method of forming a thin film using atomic layer deposition (ALD),

comprising:

providing a reactor having a single reaction space;

concurrently loading a batch of substrates into the single reaction space of the reactor;

introducing a gas containing reactants into the single reaction space, and chemically adsorbing a portion of the reactants on top surfaces of the substrates within the single reaction space;

diluting non-chemically adsorbed reactants in the single reaction space; and

removing non-chemically adsorbed reactants from the single reaction space,

wherein said introducing the gas containing reactants is performed at a first pressure and said diluting is performed to a second pressure, and wherein the second pressure is greater than the first pressure.

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2. (Cancelled)

3. (Cancelled)

4. (Currently amended) The method of claim ~~3~~ 1, wherein the first ~~predetermined~~ pressure is between approximately 0.1 Torr and approximately 0.5 Torr.

5. (Currently amended) The method of claim ~~3~~ 1, wherein said second ~~predetermined~~ pressure is greater than approximately 1.5 times the first ~~predetermined~~ pressure.

6. (Currently amended) The method of claim ~~2~~ 1, wherein ~~said introducing the gas containing reactants is performed at a first predetermined pressure,~~

~~wherein~~ said removing comprises pumping the reactor, thereby lowering the pressure of the reactor to a third ~~predetermined~~ pressure, and

wherein the third ~~predetermined~~ pressure is lower than the first ~~predetermined~~ pressure.

7. (Currently amended) The method of claim 6, wherein the third ~~predetermined~~ pressure is lower than approximately 0.5 times the first ~~predetermined~~ pressure.

8. (Original) The method of claim 1, wherein said loading comprises transferring the batch of substrates using an automatic wafer transport mechanism.

9. (Currently amended) A method of forming a thin film using atomic layer deposition (ALD), comprising:

providing a semiconductor substrate into a reactor;

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introducing a gas containing reactants into the reactor at a first ~~predetermined~~ pressure, and chemically adsorbing a portion of the reactants on the substrate surface;

diluting non-chemically adsorbed reactants in the reactor such that the pressure of the reactor is increased to a second ~~predetermined~~ pressure; and

removing the diluted non-chemically adsorbed reactants from the reactor.

10. (Currently amended) The method of claim 9, wherein the first ~~predetermined~~ pressure is between approximately 0.1 Torr and approximately 0.5 Torr.

11. (Currently amended) The method of claim 9, wherein said second ~~predetermined~~ pressure is greater than approximately 1.5 times the first ~~predetermined~~ pressure.

12. (Currently amended) The method of claim 9, wherein said removing is performed by pumping the reactor, thereby lowering the pressure of the reactor to a third ~~predetermined~~ pressure,

wherein the third ~~predetermined~~ pressure is lower than the first ~~predetermined~~ pressure.

13. (Currently amended) The method of claim 12, wherein the third ~~predetermined~~ pressure is lower than approximately 0.5 times the first ~~predetermined~~ pressure.

14. (Original) The method of claim 9, wherein the reactor includes a pressure control valve connected to an exhaustion line for removing the diluted non-chemically

adsorbed reactants and, wherein said diluting comprises substantially closing the control valve and supplying an inert gas into the reactor while substantially stopping the introduction of the gas containing reactants into the reactor.

15. (Original) The method of claim 9, wherein the reactor includes a pressure control valve connected to an exhaustion line and, wherein said diluting comprises supplying an inert gas with an amount substantially more than the amount of the gaseous reactants introduced into the reactor while stopping the introduction of the gaseous reactants into the reactor.

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16. (Currently amended) A method of forming a thin film using ALD, comprising:

providing a plurality of wafers into a single reactor;

introducing gaseous reactants into the single reactor at a first ~~predetermined~~ pressure, and chemically adsorbing a portion of the reactants on top surfaces of the plurality of substrates;

diluting non-chemically adsorbed reactants in the single reactor to a second ~~predetermined~~ pressure; and

removing the diluted non-chemically adsorbed reactants from the single reactor,

wherein said second [predetermined] pressure is greater than the first ~~predetermined~~ pressure.

17. (Original) The method of claim 16, wherein the reactor includes a pressure control valve connected to an exhaustion line and, wherein said diluting comprises substantially closing the control valve and supplying an inert gas into the reactor while stopping the introduction of the gaseous reactants into the reactor.

18. (Original) The method of claim 16, wherein the reactor includes a pressure control valve connected to an exhaustion line and, wherein said diluting comprises supplying an inert gas with an amount substantially more than the amount of the gaseous reactants into the reactor while stopping the introduction of the gaseous reactants into the reactor.

19. (Currently amended) The method of claim 16, wherein the first ~~predetermined~~ pressure is between approximately 0.1 Torr and approximately 0.5 Torr.

20. (Currently amended) The method of claim 16, wherein said second ~~predetermined~~ pressure is greater than approximately 1.5 times the first ~~predetermined~~ pressure.

21. (Currently amended) The method of claim 16, wherein said removing is performed by pumping the chamber, thereby lowering the pressure of the reactor to a third ~~predetermined~~ pressure, wherein the third ~~predetermined~~ pressure is lower than the first ~~predetermined~~ pressure.

22. (Currently amended) The method of claim 21, wherein the third ~~predetermined~~ pressure is lower than approximately 0.5 times the first ~~predetermined~~ pressure.

23. (Cancelled)

24. (Original) The method of claim 16, wherein the reactor is a furnace-type reactor and, wherein substantially all the top surfaces of the substrates face the same direction for automated wafer transfer.

25. (Original) The method of claim 16, wherein the number of the plurality of substrates is more than one hundred.

26. (Original) The method of claim 16, wherein the reactor has a single reaction space for atomic layer deposition such that all of the substrates are placed within the single reaction space.

27. (Currently amended) An atomic layer deposition (ALD) method of forming a thin film layer, comprising:

a) inserting one or more semiconductor substrates into a chamber;

b) introducing a first gaseous reactant into a reactor at a first ~~predetermined~~ pressure, and chemically adsorbing a portion of the reactants on the surfaces of the one or more substrates;

c) diluting non-chemically adsorbed first reactants in the reactor

by injecting an inert gas into the chamber to increase the pressure of the reactor than the first ~~predetermined~~ pressure;

d) removing the non-chemically adsorbed first reactants from the chamber;

e) introducing a second gaseous reactant into the reactor at a second ~~predetermined~~ pressure to form a single atomic layer by chemical exchange;

f) diluting non-chemically adsorbed reactants in the reactor such that the pressure of the reactor is increased; and

g) removing the non-chemically adsorbed reactants from the chamber.

28. (Currently amended) The method of claim 27, wherein the first ~~predetermined~~ pressure is substantially the same as the second ~~predetermined~~ pressure.

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29. (Currently amended) The method of claim 27, wherein the first predetermined pressure is different from the second ~~predetermined~~ pressure.

30. (Currently amended) The method of claim 27, wherein, during said first and second diluting, the reactor pressure is increased to not less than approximately 1.5 times the first and second ~~predetermined~~ pressure, respectively.

31. (Currently amended) The method of claim 27, wherein said removing is performed by pumping the chamber to a third ~~predetermined~~ pressure substantially lower than either first or second ~~predetermined~~ pressure.

32. (Original) The method of claim 27, wherein the single atomic layer is an oxide layer of Al_2O_3, TiO_2, ZrO_2, HfO_2, Ta_2O_5, Nb_2O_5, CeO_2, Y_2O_3, SiO_2, In_2O_3, RuO_2, or IrO_2.

33. (Original) The method of claim 27, wherein the single atomic layer is a composite oxide layer of $SrTiO_3$, $PbTiO_3$, $SrRuO_3$, $CaRuO_3$, $(Ba,Sr)TiO_3$, $Pb(Zr,Ti)O_3$, $(Pb,La)(Zr,Ti)O_3$, $(Sr,Ca)RuO_3$, $(Ba,Sr)RuO_3$, Sn doped In_2O_3 (ITO), Fe doped In_2O_3, or Zr doped In_2O_3.

34. (Original) The method of claim 27, wherein the single atomic layer is a nitride layer of SiN, NbN, ZrN, TiN, TaN, Ya_3N_5, AlN, GaN, WN, or BN

35. (Original) The method of claim 27, wherein the single atomic layer is a complex nitride layer of WBN, WSiN, TiSiN, TaSiN, or AlTiN.

36. (Original) The method of claim 27, wherein the single atomic layer is a metal layer of Si, Al, Cu, Ti, Ta, Mo, Pt, Ru, Rh, Ir, W, or Ag.

37. (Original) The method of claim 27, wherein the single atomic layer is a silicide layer of Al, W, Ti, or Co.

38. (Original) The method of claim 27, wherein the single atomic layer is a metal silicate material ($M_{1-x}Si_xO_2$), the metal "M" being selected from the group consisting of hafnium (Hf), zirconium (Zr), tantalum (Ta), titanium (Ti), Cesium (Cs) and aluminum (Al).

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39. (Original) The method of claim 27, further comprising the step of repeating at least one of steps (b) – (g).

40. (Previously amended) A method of forming a thin film, comprising:

(a) providing a reactor having a single reaction space;

(b) concurrently loading the plurality of wafers having a processing surface into the reaction space, wherein the processing surfaces of the wafers face in substantially the same direction;

(c) introducing a first reactant into the reaction space, wherein a portion of the first reactant is chemically adsorbed on the processing surface of each of the plurality of wafers;

(d) removing a non-chemically adsorbed portion of the first reactant from the reaction space;

(e) introducing a second reactant into the reaction space, wherein a portion of the second reactant is chemically adsorbed on the processing surface of each of the plurality of wafers; and

(f) removing a non-chemically adsorbed portion of the second reactant from the reaction space.

41. (Previously added) The method of claim 40, further comprising the step of repeating at least one of steps (c) – (f).

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42. (Previously added) The method of claim 1, wherein the single reaction space is not partitioned.